The Chronicle of the EARLY AMERICAN INDUSTRIES ASSOCIATION

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Farm Implements of 1803

[The following excerpts from *Gleanings from the Most Celebrated Books on Husbandry, etc.* by James Humphreys, Philadelphia, 1803, shed valuable light upon the implements used on and about the farm, at the beginning of the last century. The small numerals, superimposed above the lines of text, refer to the pages. The references to the plate are very tantalizing, as these pictures would undoubtedly be extremely interesting, but the one copy of the book which we have examined, although it appears intact, contains no plate. If any reader has this plate, we would appreciate an opportunity to reproduce it. — Ed.]

A "malt-shovel" for turning over *must* (cider pummice)[7]; a "flat three-pronged fork" for digging asparagus beds[19]; a "horse hoe" for weeding beans[28]; a "scythe or reaping hook" for cutting down beans[28]; a "straw hive, consisting of two cylinders, separated from each other by lattices, for collecting the honey without destroying the bees"[31]; a "besom" made of birch twigs[35]; a broom made of broom corn[43].

"As the roots (of the turnip-rooted cabbage) are difficult to pull up, a light mattock-like hook has been used, having a claw on one side of about 9 inches length, with a transverse edge at its end, of about 2 inches width, and at the other a kind of hatchet, or more properly cleaver; with this, the roots may be taken up with ease; its handle, of about 3½ feet in length, acting as a lever for the purpose. When the root is up, it receives a stroke or two with the side of the implement, by which its fangs are in a great degree divested of their dirt; and another, with the hatchet or cleaver on its back, which divides it in two; by such division, the sheep's teeth being introduced into the centre of the bulb, they work their way outward to the shell, and thus, with great facility, devour the whole, or nearly, shells, fangs and all."[51]

"The engines for cutting chaff are (a) the old one, still used by many: the knife works like a saw, and with it one man will cut 60 bushels per day. (b) The late invented chaff-cutters have 1, 2 or 3 blades fixed to the spokes of a perpendicular iron wheel, which is turned around by a handle. One invented by Mr. Hammand with 3 blades, cuts a bushel in a minute."[67]

A "double cheese knife" for breaking curd[69]; a "brass pan," a "cheese tub," and a "skimming dish" for cheese-making[70]; a "mill" for breaking curd in large dairies[72]; "Winlaw's mill" for winnowing clover seed.[80]

"In America they make use of two very simple instruments to collect the heads (of clover) — see the plate, fig. 11 — the dimensions are as follows, 1, 2, the shafts, 4 feet long and 3 feet asunder — 3, 4, the hands, 3 feet long and 20 inches apart — 5, the teeth, 13 inches long — the wheels are 16 inches in diameter. This machine is drawn by one horse, and guided by a man or a boy: it simply consists of an open box, about 4 feet square at the bottom,

(*Continued on page 7, column 1*)

Our Purpose

The purpose of the association is to encourage the study and better understanding of early American industry, in the home, in the shop, on the farm, and on the sea, and especially to discover, identify, classify, preserve and exhibit obsolete tools, implements, utensils, instruments, vehicles, appliances and mechanical devices used by American craftsmen, farmers, housewives, mariners, professional men and other workers.

Dues

The annual dues are one dollar, payable September first, for the year immediately ensuing. *The Chronicle* for the current year is sent to all members without additional charge. Back numbers may be secured from the Treasurer for 20c each. For further information, address any of the officers. See page 5.

Soft Soap

By U. Waldo Cutler

Not that slippery metaphorical product of an insincere mind, but that very material thing which we know to be so conducive to that which is next to Godliness, — such is my topic. The first is said to be "*mostly lie*"; in the making of the other, *lye* is an essential agent. The two must be carefully distinguished at the outset.

In a walk with my father, many years ago, over an old, overgrown hillside pasture, we came upon an empty, long-abandoned cellar-hole. Near what must have been the back doorstep lay a flat-topped stone which my guide called a "lye-stone." I had never before seen or heard of this old-time tool, and I have since then described it to many with antiquarian instincts, but have found no one familiar with even the name "lye-stone," although it must have been a useful part of the equipment of a thrifty, orderly New England household. The flat surface of this stone was grooved, the channels being so cut as to lead to one point at the edge, where a bucket was supposed to stand, to receive the lye-water leeching through the barrel of hard-packed ashes standing above. A home-made barrel, ashes from the home fireplace with its never-failing fire of wood from the home lot, grease from what nowadays would, very likely, be waste from the family kitchen, water hand-drawn from the farm well, and (most essential of all) the "know-how" on the part of the thrifty housewife, — all these elements together suggest one department of the school of life in the Tool Age of New England history.

Port Sunlight in England, the great Colgate plant in Jersey City, or many another huge modern soap factory, at home or abroad, has its interest as a present-day business enterprise, where the individual worker is but a cog in a great and intricate machine. But soap

making, as a historic home industry, possesses all the zest of a completed individual achievement, all the satisfaction of "something attempted, something done" that earned for the Village Blacksmith and for the mistress of many an old-time farm home "a night's repose."

An old book of receipts of more than a century ago, *"The Frugal House-wife, Dedicated to those who are not ashamed of economy,"* describes the process: "In the city I believe it is better to exchange ashes and grease for soap; but in the country I am certain it is good economy to make one's own soap. If you burn wood, you can make your own lye. Bore small holes in the bottom of a barrel, place four bricks around, and fill the barrel with ashes. Wet the ashes well, but not enough to drop; let it soak thus three or four days; then pour a gallon of water in every hour or two, for a day or more, and let it drip into a pail beneath. Keep it dripping till the color of the lye shows the strength is exhausted. * * * Three pounds of grease should be put into a pail full of lye. The great difficulty in making soap *"come"* originates in want of judgment about the strength of the lye. One rule may be safely trusted — If your lye will bear up an egg, or a potato, so that you can see a piece of the surface as big as a ninepence, it is just strong enough. If it sink below the top of the lye, it is too weak, and will never make soap; if it is buoyed up half way, the lye is too strong; and that is just as bad. * * * When the soap becomes thick and ropy carry it down cellar in pails and empty into a barrel."

In this page of directions the item "place four bricks around" implies that the lye-stone was unknown, or not in common use; the occupants of that farm-house in the old, now overgrown, pasture must, therefore, have been of inventive mind, or did they show their originality by moving on to some spot where stones were less numerous and bricks more easily obtained?

Old people may recall the village soap shop that, in course of time, came to take the place of that earlier home industry. This centralized handicraft was to some extent a village nuisance, for it concentrated at one single place all the worst smells of a whole township. But it relieved the home folks of one form of what we moderns call drudgery,—a word hardly in the vocabulary of the patient, sturdy, frugal, industrious founding-fathers and their hardy helpmates. At any rate the periodic soap peddler took away the month's accumulation of soap grease in part payment for a family supply of that mottled, brownish substance, neither liquid nor solid, that, in one form or another, is and has been increasingly, since civilization began, a prime human necessity. Though that name "Welcome," so often associated with the thought of soap, was in no way attached to this early symbol of a historic and Scriptural virtue, the slimy product of the village soap shop was given a welcome at the lean-to kitchen door, as its modern equivalent is welcomed everywhere, and that abandoned lye-stone still remains generally unrecognized in the old pasture, awaiting fuller appreciation through the CHRONICLE's columns.

Horn Panes for Lanterns

Lanterns with horn panes may, without question, be of great antiquity, but specimens have been found, well authenticated as having been used on naval vessels during the American Civil War, probably because glass panes would be shattered by the explosions of the guns. Francis Bannerman's Sons, of New York, have listed horn panes for lanterns in their catalogue up to the past few years.

According to Appleton's *Dictionary of Machines, Mechanics, Engine-Work and Engineering* (1852), the method of preparation of horn for this purpose, was, even then, somewhat primitive, and, it is reasonable to suppose, was not essentially different from that which had always been employed. Appleton says (Vol. I, page 25): "The first step in operating upon horn is the separation of the bony core, which is effected by macerating (soaking) the horns in water for about a month, when, from the putrefaction of the intermediate membrane, the core may be readily detached. * * * The solid portion or tip of the horn is usually sawn off, and the remainder, if not cut into short lengths, is softened by immersion for half an hour in boiling water; it is then held in the flame of a coal or wood fire, until it acquires nearly the heat of melted lead, when it becomes exceedingly soft, after which it is slit up the side with a strong pointed knife, and opened out by means of two pairs of pincers applied to the edges of the slit; and lastly, the 'flats' are inserted between iron plates previously heated and greased, which are squeezed tight in a kind of horizontal frame or press by means of wedges; wooden boards may be used. For general purposes, as for combs, the pressure should be moderate, otherwise, in the language of the workman, it *breaks the grain*, or divides the *laminae*, and causes the points of the teeth to split; but great pressure is purposely used in the manufacture of the leaves for lanterns, which are afterwards completely separated with a round-pointed knife, scraped, and polished. The heat and pressure when applied to the light-colored horn render it almost transparent."

The American Family Encyclopedia, by Webster & Parkes, published by Derby & Jackson, New York, 1859, but copyrighted in 1845, has this to say on the subject (page 222): "The first process in preparing horns for various purposes consists in separating the horn itself from the included core, to which it is attached by a thin membrane; this membrane is destroyed by macerating the whole in water about a month, and then the horn is easily separated by a blow. The horny exterior is then cut into three portions. * * * The middle of the horn, after being flattened by heat, and having its transparency improved by oil, is split into thin layers, and forms a substitute for glass in common lanterns. * * * Horn is prepared for lanterns as follows: It is first softened by hot water, and then over a gentle fire, generally made of the stalks of furze, which enables it to be slit lengthwise on one side, and kept expanded flat by a pair of tongs while it is placed in a press between iron plates that are greased. Here they remain till they are cold. They are next soaked in water, divided into *laminae*, which are scraped and pared down to the requisite thinness and transparency, with a large knife worked horizontally on a block. Afterwards these thin plates are polished with willow charcoal and rotten-stone. The Chinese are remarkably skillful in preparing this thin horn, as may be seen by a large globular lantern in the museum of the India House, about four feet in diameter, composed entirely of small plates of coloured and painted horn. Horn lanterns were also used by the ancients; for we find one mentioned in the *Amphitryo* of Plautus, and in an epigram of Martial: Pliny likewise speaks of lanterns made of dyed and painted horn."

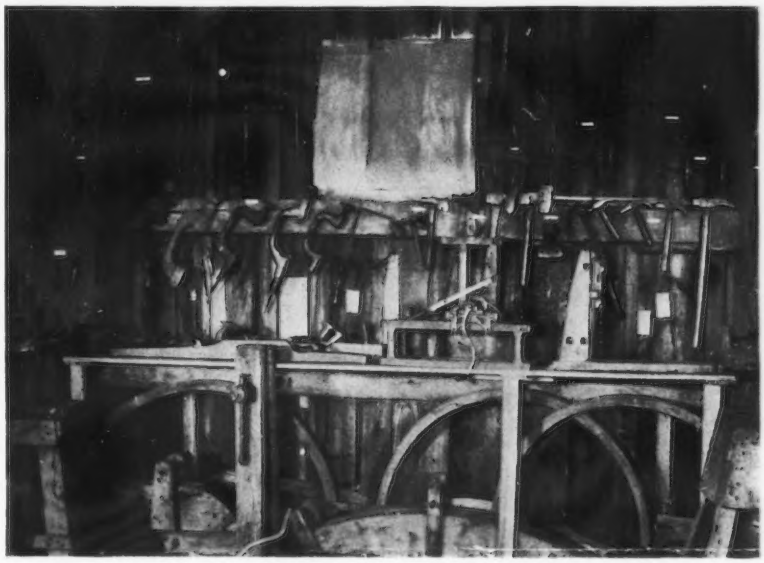
A Collection of American Implements

(Continued from last issue)

By William B. Sprague

The set of goldbeater's tools, all procured from the same source, is not far from complete and carries a particularly interesting story of how the gold foil, by several distinct processes occupying many hours, is pounded by hand from a thickness (or thinness!) of one one-thousandth of an inch to one three-hundred-and sixty-seven-thousandths of an inch, and from an area of one inch square to eighteen inches square. This craft is about as ancient as any of which we have detailed records, dating back to the time of Pliny; still no machine has yet been devised to take the place of hand work.

The production of textiles, shown in the next group, is thus far confined to the implements for working wool, flax and hemp. Wool seems to belong to the live stock class, until it is sheared from the sheep. For its subsequent treatment there are the cards and combs and the great spinning wheel to prepare it for the loom. Flax must be first freed from seed on the ripple comb, and then reduced to spinnable consistency and quality with the flax-break, swingling knife and hetchel, all of which are shown in some variety. The spools of the flax wheels contain many yards of clumsy linen thread spun by the writer. Anyone can operate a flax wheel after a fashion, but wool spinning requires considerably more knack. The implements for weaving include the massive loom with all its appurtenant devices such as the "temples," "leasing sticks," and "raddles," and also the little braid or tape looms to be stood on the table or held between the knees. Reels, niddy-noddies and swifts of course belong here, as well as a few devices for making rope from hemp, for which the preparatory processes were very similar, though not as carefully executed, as those for flax. The interesting equipment of the fuller should be included in this group, but has not yet been found. The tailor's outfit, including the shears, goose, and button-hole cutters, together with a sewing machine of the eighteen-sixties, and other accessories of the dressmaker, round out the textile section. A book of trades, published in 1827, says of the tailor, that he "ought to have a quick eye to steal the cut of a sleeve, the pattern of a flap, or the shape of a good trimming, at a glance: any bungler may cut out a shape when he has a pattern before him; but a good workman takes it by his eye in the passing of a chariot, or in the space between the door and a coach: he must be able not only to cut for the handsome and well-shaped, but bestow a good shape where nature has not granted it: he must make the clothes sit easy in spite of a stiff gait or awkward air: his hand and head must go together: he must be a nice cutter, and finish his work with elegance," and of the dressmaker, that she "must be an expert anatomist; and must if judiciously chosen have a name of French termination; she must know how to hide all defects in the proportions of the body, and must be able to mould the shape by the stays, that, while she corrects the body, she may not interfere with the pleasures of the palate."



BORING AND PLANING TOOLS

The hat-making exhibit, principally procured from Danbury, Connecticut, and its immediate neighborhood, seems to enlist the special interest of almost every visitor, and is in a fair way toward completion, conspicuously lacking, however, the "battery," a great kettle of specialized construction. For felt hats there are the seven-foot wooden key-shaped "bow," the twanging string of which chivvied the particles of fur into a flat and even mass for felting, the delicately made "basket" and "walking pin" for forming the felt, the "puller-down," "runner-down" and "slip-stick" (all blocking tools), the "shell," a hollow sad iron containing an iron slug to be heated in the fire separately, the "rounding jack" and other brim trimmers, and the "foot," the "shackle" and the "grooves" for curling brims. These latter are all made from choice woods — boxwood, mahogany, and lignum vitae—and with them were secured, from the same source, several half-finished ones — *prima facie* evidence, at least, that they were made by the same hand that used them. A separate set of tools for the silk hat maker, and the implements for splitting and flattening straw for millinery, with a variety of hat blocks, are included in this section.

Candle making, next seen, is naturally divided into the two distinct processes of moulding and dipping. The moulds include the moderately recent factory-made tin ones, in a large variety of sizes, also the earlier pewter and pottery tubes set in wooden frames. One big dipping machine is designed to produce twenty-four dozen candles at once.

The other manufacturing groups are broom-making, including primitive machines for cutting the stalks from the broom corn and winding and sewing the broom, and basket making, with a large copper pan in which to soak the material, a large variety of "moulds" upon which the baskets were woven, a revolving stool on which to

EDGED TOOLS OF THE CARPENTER

turn the moulds, and a "horse" for shaping the handles.

The next section is composed of miscellaneous tools, only a few each, of the sugar refiner, comb maker, tobacconist, slater, undertaker and others. The glass blower, calico printer, engraver, paper maker, brick maker, glazier, plasterer, potter, cutler, bookbinder, cork cutter and many more are thus far not represented at all.

The lighting division contains a few representative lanterns and a variety of lamps, and of course could be extended almost without limit by anyone who found it especially interesting. The heating group includes not only implements for supplying fuel — the charcoal burner's outfit, the small axe and bucksaw for cutting firewood, and a few tools for harvesting peat — but also foot warmers, fire carriers, warming pans and small stoves. Refrigeration is represented by a few ice harvesting implements. Water supply is one of the most interesting features of the collection, showing a section of log pipe, with the curious tools for boring it and shaping the ends, and canteens and "field barrels" of wood, tin and copper in considerable variety.

The implements used in housekeeping activities have been grouped together in a loft over the former cow stable, referred to above. The butter making outfit consists of churns of various styles, including the early "pump" churn, the lever or "wig-wag" type, and a rare kind which is rocked like a cradle to agitate the cream, wooden butter scales, ladles, skimmers, and prints, which latter can be found in attractive designs of endless variety and could well be made the subject of a specialized collection. Cheese making shows the press and its accessories, and various devices for breaking the curd before pressing. The meat division contains many kinds of grinding mills, mincing knives, sausage "guns" for forcing the chopped meat into the casings, saws, cleavers, and hooks for hanging carcasses and joints. Preparation of fruit is an interesting separate class with apple-paring machines in large variety (another chance for a specialist), labor-savers for coring and quartering, cherry-seeders and the like. The culinary department contains over one hundred and fifty articles, most of which would be entirely familiar to the reader, and a detailed description seems hardly in order. The remainder of the housekeeping department is given over to dining-table and laundry implements, brooms, mops, curious vermin traps and other articles handy to the housewife.

The collector of this class of material enjoys a unique advantage. In spite of increasing competition, he can still experience all the thrills of the antique collector of fifty years ago. He can explore territory which has long since yielded up its last Hitchcock chair and Currier and Ives print to the indefatigable combings of the "antiquers," and discover curious tools and ingenious hand-made machines of the early days, heretofore overlooked or ignored as unmarketable or otherwise devoid of interest, and usually procurable for the proverbial "song." How long this happy state of affairs will continue will depend on how rapidly the municipalities of this country, in their endeavor to establish industrial museums, to supplement those of military and historical relics, natural history and art, may encroach upon the field.

COOPER'S TOOLS

Early American Industries Association

Early American Industries Association

W. B. Sprague, President
43 Cedar Street, New York

E. T. Goodnow,
Secretary and Treasurer
West Cummington, Mass.

S. E. Gage, Chairman,
Admissions Committee
144-54 Sanford Avenue,
Flushing, N. Y.

A. E. Lownes, Chairman,
Recruiting Committee
Box 1531, Providence, R. I.

Communications should be addressed as follows: Pertaining to The Chronicle, to W. B. Sprague. Applications for membership, to S. E. Gage. Suggestions for prospective members, to A. E. Lownes. Other matters to E. T. Goodnow. Addresses as above.

This issue was printed by Leon S. Case Flushing, N. Y.

W. B. Sprague, *Editor.*

Annual Meeting

Pursuant to notice, the annual meeting of the Association was held at the Hawthorne Hotel, Salem, Mass., on Saturday morning, September 7th. All routine matters were expeditiously disposed of, and all the officers and committee chairmen were unanimously re-elected for the ensuing year. The business session lasted about one hour, a large part of which was occupied in discussing ways and means by which members could be brought more directly and frequently into personal contact, and it was agreed that the first step in this direction should be the preparation and distribution of a list of the members, with complete addresses, and arranged geographically, so as to show, at a glance, who were located in any given section. Mr. Allen Eaton very kindly offered to have this work done at a minimum of expense to the Association. Inasmuch as the bulk of the membership is scattered over the entire eastern part of the country, it did not appear practicable to have a general meeting oftener than once a year, but with this list, it can readily be determined what points would be the most readily accessible to the most members for the purpose of local meetings of a purely sociable character. Mr. Lewis N. Wiggins offered to entertain such a gathering at his Old Tavern at Northampton this fall, and it was thought that there might be several such meetings in New England during the winter. Anyone who desires to be regularly notified of such meetings should so advise Mr. Goodnow. Several such meetings were held in New York last year, and those who wish to be on the New York mailing list should notify Mr. Sprague, unless they have already done so. Members who live in other sections,— particularly in New Jersey and Pennsylvania, where they are quite numerous, — are urged to create their own local organizations. The officers of the Association will gladly co-operate.

Those who were fortunate enough to arrive at Salem on Friday were delightfully entertained by Dr. Rushford and his charming wife and daughter, at an evening meal of which the *real* clam chowder remains a fragrant memory. The evening was passed in inspecting the doctor's wonderfully comprehensive and well arranged collection of lighting devices and other interesting things, and in relating and discussing collecting adventures of the past year. After the business meeting, the balance of Saturday morning was devoted to visits to the Essex Institute and the Peabody Museum, — all too short a time, as at least three or four days would be required for a thorough inspection of either. The demonstration of early industries at the Pioneer Village was witnessed on Saturday afternoon and was naturally absorbingly interesting. The workmen were attired in Colonial costume, and with the background of primitive structures, a truly seventeenth-century scene was created. Two men, one in the pit, were sawing a huge log into boards with a pit-saw. Another group were making bricks out of native clay. Two sturdy smiths were forging nails and handing them out to visitors. The preparation of flax and the spinning and weaving of the resultant linen was clearly demonstrated and explained. Silversmiths were hard at work in one of the cabins, and a shoemaker plied his trade in front of another. Salt making and fish curing were actually in process and willingly discussed with inquiring visitors by those in charge. Limitations of space will not permit mention, let alone description, of more than a few of the activities, but all were watched with the keenest interest.

Connecticut Tercentenary

A very noticeable feature of the Connecticut Tercentenary celebration, held this year, has been the attempt by many of the communities to present exhibits, in some fashion portraying the early industries, and this has furnished a striking example of the present and potential usefulness of our Association. In the great majority of cases, in spite of valiant efforts on the part of local committees, the showing has consisted of spinning wheels and reels (which, for some reason, seem to have been preserved in legion numbers, — although few have their working parts intact) and a few scattered tools, with no particular relation to one another. On the other hand, in Litchfield, Connecticut, where two of our active collecting members have their headquarters, it was found possible to fill a large room, divided into separate sections, showing a wide range and coordinated series of implements used in cookery, production of textiles, farming, dairying, carpentry, hat-making, etc. Incidentally, although the Litchfield exhibit of furniture, portraits, silverware, and other *objets d'art* would have done credit to any large city, it was remarked by many that the early industries room was, almost always, the most crowded with visitors. During the first part of October, there will be held at Hartford an exposition of the manufactures of the state, and the promoters of this exhibit consider it highly essential to provide a background of early tools, in order to show the progress which has been made in the last hundred years or so. The state has no industrial museum to resort to for material, and here again several of our members have been requested to lend from their collections for this purpose.

"When William Hutton, the historian of Birmingham, in the year 1471, first approached that city from Walsall, he was surprised at the prodigious number of blacksmiths' shops upon the road, and could not imagine how the country, though populous, could support so many people of the same occupation. In some of these shops, females were observed wielding the hammer, and, being struck with the novelty, Hutton inquired whether the ladies in that country shod horses? He was told, with a smile, that they were nailers." — *Chas. Tomlinson.*

Files and Sandpaper

By L. L. Thwing

It is unlikely that we shall ever see a file dating back to the 18th century, or that a claim for such age could be substantiated. Files are, however, very old, and it is claimed that certain chipped flints were intended for files. Certainly primitive races even today use crude files. For example, the natives of Dutch Guina use a rasp, made by bedding a large number of small flints in a slab of cassava root, which holds them firmly, after the wood is allowed to dry and harden around the flints. None of the tools of the bronze age have been definitely identified as files, but this, in no wise, precludes the possibilities of their use. There is a Greek word for files derived from the name of the shark whose skin was — and is — used for polishing. The Romans had a word, *lima*, for files, and another, *scorbina*, for rasps. Both Vitruvious (100 B.C.) and Pliny (50 A.D.) mention files. The latter says that a certain statue in Rome bore a file in its hand. Roman files have been dug up in Saalsburg. By the 12th century, the art of cutting files had advanced, as the monk Theophilus describes two methods of cutting and two methods of case-hardening them with ox horn. Fifteenth century manuscripts show file cutters at work and illustrate both single and double cut files. In da Vinci's sketch book is a design for a file-cutting machine. From 1550 to 1650 a surprising number of books were published, with illustrations giving details of the tools and methods of that period. From these we learn that files were more highly developed than even today. This was because so much of the work was hand work. Very large files were used, — so large that one end was supported by a strap or the tool laid on the bench and the work rubbed over it. Rasps with teeth in the form of arcs were illustrated and described before 1800.

Polishing and grinding are very old processes. In fact, one of the cultural ages is called the Polished Stone Age. Both solid rubbing stones and loose sand were used. It is therefore reasonable to assume that these processes have continued in uninterrupted use since that time.

There are also certain natural substitutes for sandpaper. The tongue of a certain fish has such sharp bony papillae that it can be used as a sort of flexible rasp. The use of dog fish or shark skin has been mentioned before, and even today such skins are listed in Hammacher & Schlemmer's catalogue. Shave grass is a sort of rush so high in silicates that it can be used as a natural steel wool. Both this and shark skin are mentioned by Plumier (1701). But how old is real sandpaper?

[Dr. Mercer states, in his *Ancient Carpenter's Tools*, that he never found it in home-made form, but that the *New England Dictionary* (1772) mentions "emery paper," Martin's *Circle of Mechanical Arts* (1813) speaks of "glass paper," and Stoke's *Complete Cabinetmaker's Guide* (1829) gives directions for making "glass paper" by sprinkling powdered glass on glued cartridge paper. This would indicate that sandpaper, in the strict sense, must be a comparatively modern device. — Ed.]

A Book on Ornamental Woodwork

By Rev. C. A. Luther

In a recent number of The Chronicle, the Editor made reference to books bearing upon early industries and structures. Such a book has recently come into my possession, and seems worthy of attention as a source-book for early builders; just such a book, for example, as might have inspired and guided Samuel McIntire in the construction of the Pingree house in Salem, where McIntire is seen at his best. The book is William Pain's *Carpenter's and Joiner's Repository, or a New System of Lines and Proportions for Doors, Windows, Chimnies, Cornices and Mouldings*, published in London, 1792, a book of splendid proportions (9½" x 15"), leather binding and printed on superb linen paper. The original edition appeared in 1778, and many of the illustrations bear the earlier date. The work is illustrated with sixty-nine copper-plate engravings, showing ornamental doorways, cornices, fire-place mantels, stairways, and numerous scrolls and bosses. The text forms a relatively small part of the book, and, in spite of the statement in the title that the "plan is entirely new and easy to be understood," it would appear that understanding would wait upon diligent and prolonged study. It is not necessary to go into details of "circular soffits," "flewing and winding," "groins," "angle-brackets," "elliptical skylights," etc., all of which are treated in detail. The table of contents is followed by a "Rule to Calculate What Light is Sufficient for any Room, with the Proportions Suitable Thereto." The rule succinctly follows: "Let the Dimensions of the Room be given, viz., The Length, Breadth and Height. Multiply the Length and Breadth of the Room together, and the Product by the Height; the Square Root of which is the Quantity of Light required." Other instructions relate to details of construction, as outlined in the title, and present numerous ornamental designs for cornices, mantels, stairways, etc. It can scarcely be called a builder's guide, having to do rather with ornamental features. The guide to actual construction is doubtless supplied by the author's *Practical Builder, or Workman's General Assistant*, London, 1778, a fourth edition of which appeared in Boston, 1792. There are certain matters of interest about the book itself. It does not appear to have reached a wide circulation, in America, at least. The Library of Congress possesses a copy, as does the Boston Public Library. These are the only copies I have been able to locate. On one of the pages near the back of my volume is inscribed, in almost copper-plate engraving, a former owner's name,— Daniel Ethridge, Walworth, Wayne Co., N. Y. This owner migrated to the Western Reserve sometime about the middle of the 19th century, and from him the book came into my family. One wonders what may have been in the mind of this former owner, when he jotted down this comment on one of the pages — "The author of this Book is a poor calculator." Without actually verifying the note, one would be inclined off-hand to agree with it.

"A little trick is sometimes used among some (that would be thought cunning carpenters) privately to touch the head of the nail with a little ear-wax, and then lay a wager with a stranger to the trick, that he shall not drive that nail up to the head with so many blows. The stranger thinks he shall assuredly win, but does assuredly lose; for the hammer no sooner touches the head of the nail, but instead of entering the wood it flies away, nothwithstanding his utmost care in striking it downright." (From Joseph Moxon's Mechanik Exercises, London, 1683).

New Members

Please check your name and address and advise Mr. Goodnow of any corrections. The total membership is now 558.

Dr. A. S. Brackett, *Bristol, Conn.*
Howard Bradstreet, *Hartford, Conn.*
Miss Rose Briggs, *Plymouth, Mass.*
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Farm Implements

(*Continued from page 1, column 2*)

and about 3 in height, on 3 sides; to the fore part, which is open, teeth are fixed, similar to those of a cradle, about 3 feet in length, and so near as to break off the heads from the clover stocks between them, which are thrown back into the box as the horse advances; the box is fixed on an axle tree, supported by two small wheels, 2 feet in diameter; two handles are affixed to the hinder part, by means of which the driver, while he manages the horse, raises or lowers the teeth of the machine, so as to take off the heads of the grass; and, as often as the box is filled with them, they are thrown out, and the horse goes on as before. Fig. 12, is called a cradle, and is made of an oak board about 18 inches in length and 10 in breadth; the fore-part of it, to the length of 9 inches, is sawed into teeth; a handle is inserted behind, inclining toward them, and a cloth put round the back-part of the board, which is cut somewhat circular, and raised on the handle; this collects the heads or tops, and prevents them from scattering, as they are struck off by the cradle, which may be made of different sizes; being smaller in proportion for women and children."[81]

"In most places the milk is *skimmed* with a dish; but in Yorkshire, the milk is *let off* through a hole in the center, leaving the cream in the lead. The pipe, through which the milk escapes, is fitted with a tall wooden stopper; previous to drawing the stopper, a loose wide leaden pipe, 7 or 8 inches long, is put over it; the base of this is notched, or otherwise made uneven, so as to admit the milk to steal away beneath it, without endangering the escape of the cream, which (the pipe being removed) is afterwards let down through the same aperture."[91]

"Nottingham cultivator. This has, in common with a plough, a beam, wheels, and handles; instead of a share, there are two bulls, (the bars into which the teeth are fixed. — Ed.) the first 4 feet 6 inches long, with four teeth; the second 3 feet 9 inches, with five teeth — the teeth are 2 feet long and bent near the bottom, for the share part to be flat on the earth; the teeth are 12 inches apart, and by intersecting the distance, is reduced to 6, and the breadth of the share being 3, reduces the intermediate space to a very small dimension. — Four horses and one man will plough from six to seven acres per day, in sand land."[97]

"Cook cultivator. Called also a *Skuffler.* — It consists of a diagonal beam, with from three to seven shares, of different sizes, for various uses, applied to two handles, by which it is guided laterally, and may also be forced into the ground to any given depth at pleasure. It is used as a substitute for ploughing and harrowing, but tearing or lacerating the soil internally, without tearing a furrow. The narrow shares or scarifiers are, in some cases, used for obtaining a tilth (cultivation — Ed.) in light soils without ploughing at all; and the broad shares for cutting up a fleece of weeds, and afterwards leaving them to perish on the surface of the land. In strong, compact land one previous ploughing is necessary."[98]

"The implements for dibbling of beans, nuts and potatoes are (a) the common dibble, about 18 inches long, with a handle like a spade, and the point shod with iron; (b) long dibble: this is about 3½ (feet) long, and is used for potatoes; (c) The following method for making holes for beans has been recommended, viz. Take a plank of oak, of such a size as a man can easily manage, by a handle fixed upright in the middle of it, and of such thickness as not to give way in working; in the under part of this plank, let there be fixed wooden pegs, of such length, and at such distance from each other, as may form proper holes in the ground for the beans: when the land has been properly prepared, the workman must thrust the pegs of this instrument into the ground, and proceed side-ways, managing it so, that there may be the same distance between the last row of holes made by the first impression, and the first row made by the next, as there is between the rows of any one impression. The youngest children may be taught to follow the instrument, and drop a bean into every hole that it makes."[100] For making open drains, "the *draining wheel* is made of cast iron, four hundred weight, 4 feet in diameter; the cutting edge, or extreme circumference of the wheel, is half an inch thick, which increasing in thickness toward the nave or centre, will, at 15 inches deep, score out or cut a drain half an inch wide at bottom, and 4 inches wide at the top. This wheel is so placed in a frame, that it may be loaded at pleasure, to be made to operate to a greater or less depth, according to the resistance made by the ground."[103] Sod or earth drains are dug 2 spade, or 2 feet deep, then with another instrument (see plate, fig. 3) of 4 inches wide, take out the soil of the drain made by the spade 12 inches deeper".[104] "Wheatstraw, twisted to the thickness of a man's leg, is carefully laid along the bottom, — fig. 5 is an engine used to twist it."[105]

(*Continued in next issue*)

John Loudon Macadam (1756-1836), a Scottish engineer, invented the method of treating roadways with a consolidated layer of broken stones, on either a soft or solid foundation. Long before his time, however, the roadways in the old province of Limousin, in central France, had been "macadamized" under the administration of Monsieur Turgot (1727-1781). It is not likely that Macadam knew of this process. It has, however, been asserted that he drew his inspiration from the report made of Lord Macartney's embassy to China, by G. Staunton, its Secretary. The latter was impressed by the Chinese mode of building roads, and upon his return found an attentive listener in Macadam, his father's engineer. The roads afterwards built by Macadam near Bristol are oddly reminiscent of the Chinese roadways reported upon by G. Staunton, the secretary of the Macartney embassy.

COMMUNICATIONS

From MR. HENRY W. ERVING:

"I read with very considerable interest your article describing your collection, and I note that you have some 'pattens.' I have a pair which is the only pair of American-made pattens that it has been my fortune ever to have seen. I presume there may be numerous others. I have also a smaller pair, child's size, clearly English. These, together with a pair of "clogs" which were a little more refined than the pattens, are the only articles of early footwear that I possess. I think pattens were, if not in common use, in very frequent use, especially in the cities, for the first decade or two at least in the 19th century. If you recall, Mrs. Gamp, who was not introduced to society until the early '30s, never could leave home without her pattens and her umbrella. We had, at one time, when I was a small boy too young to appreciate and preserve such things, a pair of very early rubber overshoes. They were in use certainly as early as 1825, long before vulcanization, which was not until 1842 or 1843, and were made of India rubber, molded into form and resembling nothing so much as a heavy woolen stocking cut off at the ankle. I saw a pair some years ago at the Octagon House, which is back of Memorial Hall at Plymouth, and I think the contents are owned by the Colonial Dames. In the very upper story, unprotected from moths unhappily, they still have quite a number of ancient garments and, as I remember, one or two pieces of uniform, beloved of moths. In a glass case containing minor things, satin slippers, etc., was a pair of these heavy overshoes. None of the ladies knew what they were for, or, in fact, anything about them. They retained their flexibility for a great many years, and for some reason were not sticky. Sam Weller tells about the genetleman that blew his brains out for principle's sake, who was one of these particular sort of chaps that thrust his feet into little rubber fire buckets whenever he went out in the rain. If you are not familiar with these little "fire buckets," I think a pair may be seen in the museum of the "Preservation Society" on Cambridge Street, Boston. I am confident that George Francis Dow has told me that they had some."

From MR. C. M. WATKINS:

"September 23rd is the opening date for the Rushlight Club's first exhibition of early lighting devices, to be held at the Boston Public Library until October 20th. There will be a wealth of lamps, from the earliest known types down to those of the kerosene days, as well as rush holders, tapers, candlesticks, and every available appurtenance of lighting in the past. The exhibition will be arranged to show the development of these various types, and examples will come, it is hoped, from every member of the club. Lists of interesting lights have been submitted by practically all members, and from each of these lists at least three examples are being chosen. In spite of the large number of persons participating in the exhibit, there will be, under this system of selection, no duplication, and an extremely wide distribution of types is expected."

"POINTS" OF INTEREST

"*To Purify Tallow for Candles.*

"Take 5-8 of tallow, and 3-8 of mutton suet; melt them in a copper chaldron, with it mix 8 ounces of brandy, one of salt of tartar, one of sal ammoniac, two of dry potash. Throw the mixture into the chaldron, make the ingredients boil a quarter of an hour, then set the whole to cool. Next day the tallow will be found on the surface of the water in a pure cake. Take it out and expose it to the air for some days on canvas. It will become white and almost as hard as wax. The dew is favorable to its bleaching. Make your wicks of fine even cotton; give them a coat of melted wax, then cast your mould candles. They will have the appearance of wax in a degree, and one of them (six to a pound) will burn fourteen hours and not run."—*The Farmers' Own Book, by H. L. Barnum, pub. by Carter and Hendee, Boston,* 1832.

Safes for valuables, up to about 1820, were made of oak, reinforced with iron. The Great Industries of the United States, by J. B. Burr and Hyde, mentions "a safe, formerly used by the Marietta Bank, and made in New York in 1807, which is constructed of oak plank, two inches in thickness, bound together by iron straps, and thickly studded with small nails. It was secured by an ordinary hasp and padlock." The first patent for a fireproof safe was issued to Daniel Fitzgerald in 1843.

According to the Female Tattler of December 12, 1709, the umbrella was intended only as a protection between the door and the carriage. Jonas Hanway, who died in 1786, used one as a pedestrian, thus outraging public opinion, and defying the coachmen and sedan-chairmen who considered that protection from rain was their monopoly. The umbrella of those days was made of oiled silk, upon a heavy frame. The account in the Female Tattler suggests to the "young gentleman belonging to the custom-house, who, for fear of rain, borrowed the umbrella at Will's Coffee House, Cornhill, of the mistress" that "to be dry from head to foot, on the like occasion, he shall be welcome to the maid's pattens." Gay mentions the umbrella as early as 1712, in his poem "Travia" in which he says:

"The tucked-up seamstress walks with hasty strides, while streams run down her oiled umbrella's sides." Mr. J. Jamieson, a Scottish surgeon, brought with him from Paris, in 1781, an umbrella, which was the first seen in Glasgow, where he resided, and where it attracted universal attention. About 1774, "umbrilloes" were mentioned as being used in Boston. They were large, blue, with a ferrule like a small pagoda, and wood enough in the handle for a harpoon stock.

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